

WHAT IS CLAIMED IS:

1 1. A method of dynamically shortening error correction
2 codewords in an error correction code interleaving arrangement that divides error
3 correction codewords into segments for recording across a codeword matrix, the
4 method comprising:

5 receiving user data for recording on a storage medium;
6 determining the size of the received user data and the amount of
7 matrix that will be filled by the received user data; and
8 recording error correction codewords segments in an interleave
9 dynamically created to correspond only to the portion of the matrix filled by the user
10 data.

1 2. The method of claim 1 wherein the user data is partitioned for
2 recording onto the recording medium in a plurality of tracks, and each segment of
3 a codeword is recorded on a separate track.

1 3. The method of claim 1 wherein the matrix includes a
2 predetermined number of partitions each dimensioned to hold a predetermined
3 number of bytes of user data, and determining the amount of matrix that will be
4 filled comprises determining the number of partitions filled by the user data.

1 4. The method of claim 3 wherein if the user data does not fill
2 all the partitions, shortening the codewords to provide an interleave of codeword
3 segments corresponding to the number of partitions filled by the user data.

1 5. The method of claim 1 further comprising:
2 reading the data from the storage medium;
3 determining that the data only fills a portion of the matrix; and
4 automatically recreating the error correction codewords as a function
5 of the dynamically created interleave recorded on the medium.

1 6. The method of claim 5 wherein reading the data from the
2 storage medium comprises determining the shortening value of error codewords
3 corresponding the partial data fill.

1 7. A system for dynamically shortening error correction
2 codewords used in an error correction code interleaving comprising:

3 a data buffer for receiving user data, the data buffer including a
4 processing arrangement for determining the amount of data received in the data
5 buffer;

6 an error correction code write buffer connected to the data buffer for
7 receiving the user data as well as an indication of the amount of data, the write
8 buffer including a processing arrangement for determining a shortening value for
9 error correction codewords that correspond to the amount of user data, and
10 recording the user data and error correction codewords on a recording medium.

1 8. The system of claim 7 wherein the write buffer processing
2 arrangement is further arranged to divide each of the determined number of error
3 correction codewords into a plurality of segments, and each segment is recorded on
4 a different track.

1 9. The system of claim 7 wherein the write buffer processing
2 arrangement is further arranged to process the user data into a predetermined
3 number of partitions each dimensioned to hold a predetermined number of bytes of
4 user data, and only partitions corresponding to the amount of user data are filled.

1 10. The system of claim 7 wherein the write buffer processing
2 arrangement is further arranged to determine an amount of an error correction
3 codeword matrix that will be filled by the received user data, the shortening size of
4 the error correction codewords is determined to correspond only to the portion of
5 the matrix filled by the user data.

- 1 11. The system of claim 7 further comprising:
2 an error correction read buffer having a processing arrangement for
3 reading the data from the storage medium, and determining that the data only fills
4 a portion of an error correction codeword matrix, wherein the read buffer
5 processing arrangement automatically determines the shortening value of the error
6 correction codewords corresponding the partial data fill.